

second resin film contains a weather-resistant resin film and the other includes an impact-resistant resin film. Claims 2-4, 6, 7, 13-15, 17, 18, 21-23, 25 and 26 have been canceled. The amendments are supported in the original claims and, for example, at page 6, lines 6-15, page 10, line 24 to page 11, line 10 and page 11, lines 19-26.

Claims 1, 2, 13 and 21 stand rejected under 35 U.S.C. § 112, first paragraph, because the Examiner could not discern the meaning of the term “composed of”. The amendment to claim 1 and cancellation of claims 2, 13 and 21 have addressed the rejection. Therefore, the rejection under 35 U.S.C. § 112, first paragraph, should be withdrawn.

Claim 4 stands rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter of the invention. Claim 4 has been canceled, but the limitation of claim 4 has been incorporated into claim 1, where the “weather-resistant” and “impact resistant” layers are defined within the claim. As the invention is now distinctly claimed, the rejection under 35 U.S.C. § 112, second paragraph, should be withdrawn.

The present invention is directed to a hard coat film that includes a silicone-based hard coat layer on one side of a multi-layered base. The base includes a plurality of first laminated resin films and, optionally, one or more second laminated resin films that are different than the first resin film. One of the first resin film and the second resin film includes a weather-resistant resin film selected from styrene-based resins, polycarbonate resins, polymethyl methacrylate resins and combinations thereof and the other does not. The other of the first resin film and the second resin film includes an impact-resistant resin film having a Charpy impact strength of at least 10 kg-cm/cm². The hard coat film may be placed on glass to shield ultraviolet rays, protect the glass from breakage and prevent the scattering of glass fragments when the glass is broken.

Claims 1, 3-12, 14-20 and 22-28 stand rejected under 35 U.S.C. § 102(b) as being anticipated by JP-11-309813 (hereinafter “JP ‘813”).

JP ‘813 discloses a hardcoat film layer prepared by laminating a UV ray cutting layer and a hardcoat layer containing a silicon compound having a siloxane combination on one surface of a transparent base material film. The transparent base material film includes a plurality of different laminated resin films. The UV ray diffuser is a powder obtained by minutely granulating titanium dioxide, zinc oxide, cerium oxide or the like.

In order to anticipate a claim, a prior art reference must disclose every limitation in a claim. JP ‘813 does not disclose or in any way suggest using a plurality of laminated layers of the same resin film in the base as in the amended claims. Further, JP ‘813 does not suggest or in any way motivate one skilled in the art to use a combination of laminated layers in the base, including a weather-resistant resin film selected from styrene-based resins, polycarbonate resins, polymethyl methacrylate resins and combinations thereof and an impact-resistant resin film having a Charpy impact strength of at least 10 kg-cm/cm². Because JP ‘813 does not anticipate the amended claims, the rejection of claims 1, 3-12, 14-20 and 22-28 under 35 U.S.C. § 102(b) based on JP ‘813 should be withdrawn.

Claims 1, 3-12, 14-20 and 22-28 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,391,400 to Russell et al. (hereinafter “Russell”).

Russell discloses a coated polymer sheet useful as a visibly transparent heat reflective thermal control films suitable in glazing applications. The coated polymer sheets include a polymeric sheet and a multilayer coating adhered to the polymer sheet. The multilayer coating includes two or more alternating layers of high and low index of refraction inorganic dielectric materials. The polymer sheet may be any thin flexible sheet that includes an organic polymeric material. Russell goes on to disclose a laundry list of polymers that may be used (col. 17, line 40 to col. 18, line 17).

The Examiner has extracted polymethyl methacrylate (PMMA) and polycarbonate (PC) from the list of polymeric materials as examples of "inherently" weather resistant films and polyethylene terephthalate (PET) as an "inherently" impact resistant film to support the anticipation rejection.

In order to anticipate a claim, a prior art reference must disclose every limitation in a claim. Russell does not disclose or in any way suggest using a plurality of laminated layers of the same resin film in the base as in the amended claims. Further, Russell does not suggest or in any way motivate one skilled in the art to use a combination of laminated layers in the base, including a weather-resistant resin film selected from styrene-based resins, polycarbonate resins, polymethyl methacrylate resins and combinations thereof and an impact-resistant resin film having a Charpy impact strength of at least 10 kg-cm/cm².

Russell offers a laundry list of potential polymeric materials that may be used in the base. The Examiner has used the present invention as a template to select polymeric materials from the laundry list provided by Russell to support the anticipation rejection. This amounts to improper hindsight. However, as one skilled in the art would readily recognize, not every PMMA or PC has good weather resistance, only those within a desired molecular weight range will provide this property. Similarly, not every PET will provide adequate impact resistance. Applicants define a weather-resistant film as one that shows no abnormality in appearance when exposed to severe outdoor environments for long periods (page 10, lines 19-22). Impact-resistant films are defined as those having a Charpy impact strength of at least 10 kg-cm/cm² (page 11, lines 19-26).

The amended claims require that the base include a plurality, i.e., two or more, of a first laminated resin film, and, optionally, one or more second laminated resin films; that any styrene-based resins, polycarbonate resins or polymethyl methacrylate resins used in the base be weather-resistant; and that any impact-resistant resin film used in the base have a

Charpy impact strength of at least 10 kg-cm/cm². These limitations are not disclosed by Russell and, therefore, Russell does not anticipate the amended claims. For the reasons stated above, the rejection of claims 1, 3-12, 14-20 and 22-28 under 35 U.S.C. § 102(e) based on Russell should be withdrawn.

Claims 1, 3-12, 14-20 and 22-28 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,956,175 to Hojinowski (hereinafter "Hojinowski") in view of U.S. Patent No. 6,103,370 to Onozawa et al. (hereinafter "Onozawa"). The Examiner indicates that it would have been obvious to one of ordinary skill in the art to modify the substrate with a hard coat film disclosed by Hojinowski by providing the adhesive layer with a release liner as taught by Onozawa in order to protect the adhesive prior to affixing the film to the desired end product.

Hojinowski discloses a solar control window film that includes a transparent substrate bearing a thin, optically transparent layer of metal, an optically transparent layer of near infrared energy absorbing material and a transparent layer of protective material overlying and protecting the near infrared energy absorbing material and the metal. Hojinowski describe the substrate (#10 in Fig. 1) as follows at col. 5, lines 44-58:

The substrate 10 may be glass or plastic, rigid or flexible, and may comprise any of the transparent supporting materials conventionally used for solar control film, particularly flexible polymer films supplied in web form and having a thickness from about 1 to about 2 mils up to about 50 mils. The thicker films, in addition to supporting the solar control elements, impart safety features to the window system, particularly, shatter resistance, burglary deterrence, blast and ballistic resistance, and wind damage resistance. Suitable polymers for the substrate 10 include polyethylene terephthalate (PET), polyethylene naphthalene (PEN), polycarbonate (PC), polyurethane (PUR), polybutylene (PBN), polyvinyl fluoride (PVF), polyvinylidene fluoride (PVDF) and acrylic. It is preferred that the substrate film be "weatherable", i.e., comprise a film containing ultraviolet absorbers.

Onozawa discloses a hard coat sheet that includes a base sheet and a coating layer of a radiation-curing silicone resin based on 100 parts by weight of a multi-functional acrylate. The base sheet includes wood free paper, coated paper, kraft paper or thin paper and may be a sheet formed of a resin film and a sheet of paper which are laminated on each other.

The Examiner has mischaracterized the disclosure of Hojinowski. Hojinowski defines the term "weatherable" as "comprising a film containing ultraviolet absorbers". The film in this case is not defined. Further, Hojinowski clearly relates the term "weatherable" to the substrate 10, not the polymer sheet 16, which includes an NIR energy absorbing dye. Additionally, Hojinowski does not disclose that the substrate include a plurality, i.e., two or more, of a first laminated resin film, and, optionally, one or more second laminated resin films; that any styrene-based resins, polycarbonate resins or polymethyl methacrylate resins used in the base be weather-resistant; and that any impact-resistant resin film used in the base have a Charpy impact strength of at least 10 kg-cm/cm² as in the amended claims.

The disclosure in Onozawa of a base sheet formed of a resin film and a sheet of paper which are laminated on each other does not provide any motivation to one skilled in the art to modify the substrate disclosed by Hojinowski to arrive at the multi-layered base in the present claims.

Because Hojinowski and Onozawa, taken alone or in combination, do not teach, suggest or provide any motivation to one skilled in the art to make the hard coat film comprising a silicone-based hard coat layer provided on one side of a multi-layered base as in the amended claims, the rejection of claims 1, 3-12, 14-20 and 22-28 under 35 U.S.C. § 103(a) should be withdrawn.

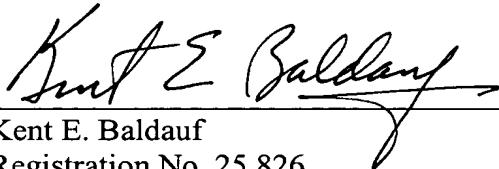
In view of the above amendments and remarks, reconsideration of the rejections and allowance of claims 1, 5, 8-12, 16, 19, 20, 24, 27 and 28 are respectfully

requested. If the Examiner should have any questions regarding this Amendment, he is encouraged to contact the undersigned attorney.

Respectfully submitted,

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MARKED-UP VERSION OF CHANGES MADE

IN THE CLAIMS:

Claims 1, 5 and 8 have been amended as follows:

1. (Amended) A hard coat film comprising a silicone-based hard coat layer provided on one side of a multi-layered base [composed of] comprising a plurality of the same [or] first resin film and optionally one or more of a second different resin film laminated, wherein one of the first resin film and the second resin film contains a weather-resistant resin film comprising resins selected from the group consisting of styrene-based resins, polycarbonate resins, polymethyl methacrylate resins and combinations thereof, and the other of the first resin film and the second resin film comprising an impact-resistant resin film having a Charpy impact strength of at least 10 kg-cm/cm².

5. (Amended) The hard coat film according to claim [4] 1, wherein said silicone-based hard coat layer is provided on said weather-resistant film of the multi-layered base.

8. (Amended) The hard coat film according to claim [6] 11, wherein said weather-resistant resin film containing an ultraviolet absorber is of polycarbonate or polymethyl methacrylate containing an ultraviolet absorber.